Inventor: Matthew Kuhlen
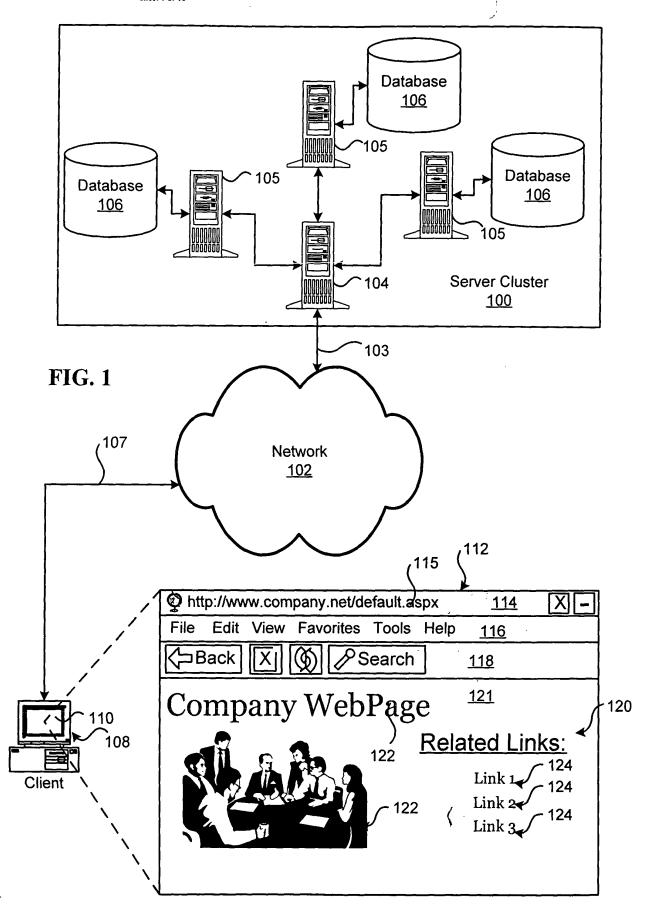Docket No.: 60001.0258US01
Title: ABSTRACTING LINKS TO ELECTRONIC RESOURCES IN A NETWORK
ENVIRONMENT
Attorney Name: David D. Wier
Phone No.: (303) 357-1647
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Database
106

105

Database
106

105

Database
106

105

104

Server Cluster
100

103

FIG. 1

107

Network
102

115

112

http://www.company.net/default.aspx   114   X   −

File   Edit   View   Favorites   Tools   Help   116

⬅Back   X   ⊗   🔑Search   118

Company WebPage   121

122

Related Links: 120

124
Link 1
124
Link 2
124
Link 3

122

108
110

Client

Inventor: Matthew Ruhlen
Docket No.: 60001.0258US01
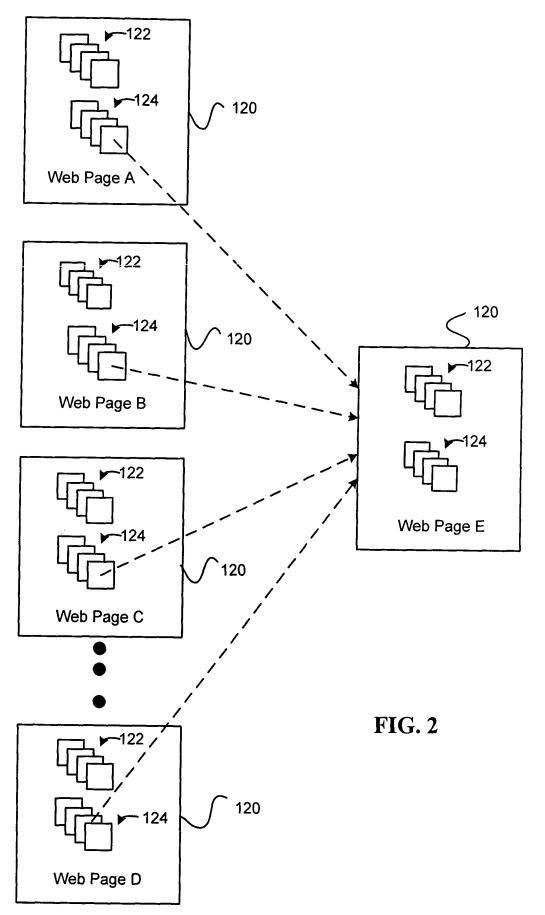Title: ABSTRACTING LINKS TO ELECTRONIC RESOURCES IN A NETWORK
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FIG. 2

Inventor: Matthew Ruhlen
Docket No.: 60001.0258US01
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ENVIRONMENT
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FIG. 3

400

```
402  <HTML>
403  <HEAD>
   404    
      ⋮
405  </HEAD>

407  <BODY>
408    <td colspan="4" background="images/edge4.gif" height="31">
                                              ⋮
406        412  414          418
          <p>
410  <ont:ontanchor hlid = Apple/>
          <\p>

409  <\BODY>
411  </HTML>
```

FIG. 4

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500

501

Computing System

104

Resource Server

Link Source File
502

Compiler
504

Link
Identification
Index

506

Data Structure

508

Configuration Module
509

FIG. 5

Docket No.: 60001.0258US01
Title: ABSTRACTING LINKS TO ELECTRONIC RESOURCES IN A NETWORK
ENVIRONMENT
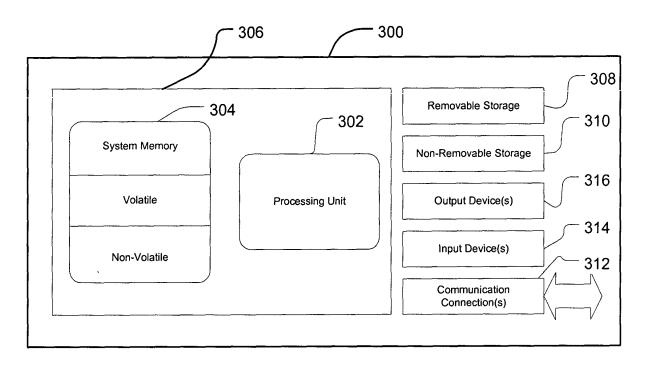Attorney Name: David D. Wier
Phone No.: (303) 357-1647
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502

#COMMENTS   504

SERVICE EXTERNAL   510

SERVICE SAMPLESERV1

SERVICE SAMPLESERV2   506

SERVICE SAMPLESERV3

SERVICE LOCAL   510   518

418

hlidApple   SAMPLESERV1   /fruit/northamerica.aspx
hlidOrange   SAMPLESERV1   /fruit/northamerica.aspx   513
hlidPear   SAMPLESERV1   /fruit/southamerica.aspx
hlidGrape   SAMPLESERV1   /fruit/europe.aspx
hlidBlue   SAMPLESERV2   /color/dark.aspx
hlidBlack   SAMPLESERV2   /color/dark.aspx
hlidWhite   SAMPLESERV2   /color/light.aspx   508
hlidHome   SAMPLESERV3   /browser/home.aspx
hlidSearch   SAMPLESERV3   /search/results.aspx optional+query
hlidReadNewsGroups EXTERNAL   http://www.cnn.com/nwsgrps
hlidErrorAuthz LOCAL   /_Services/errors/errorAuthz.aspx

520

FIG. 6

Docket No.: 60001.0258US01
Title: ABSTRACTING LINKS TO ELECTRONIC RESOURCES IN A NETWORK
ENVIRONMENT
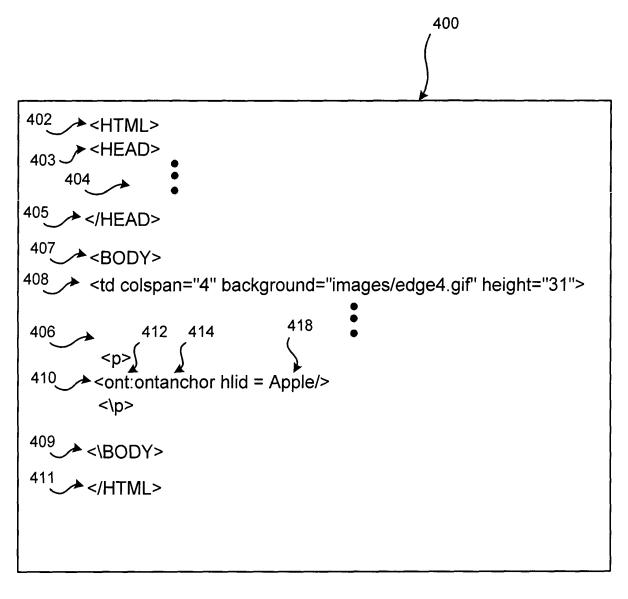Attorney Name: David D. Wier
Phone No.: (303) 357-1647
Sheet 7 of 10

506

CLASS hlid ← 522
    Apple = 0; ← 524
418 →   Orange = 1;
    Pear = 2;
    Grape = 3;
    Blue = 4;
    Black = 5;
    White = 6;
    Home = 7;
    Search = 8;
    ReadNewGroups = 9;
    ErrorAuthz = 10;

FIG. 7

508

524   510   518

{0,"SERV1","/fruit/northamerica.aspx"} ← 528
{1,"SERV1","/fruit/northamerica.aspx"}
{2,"SERV1","/fruit/southamerica.aspx"}
{3,"SERV1","/fruit/italy.aspx"}
{4,"SERV2","/color/dark.aspx"}
{5,"SERV2","/color/dark.aspx"}
{6,"SERV2","/color/light.aspx"}
{7,"SERV3","/browser/home.aspx"}
{8,"SERV3","/search/results.aspx","optional query"}
{9,"EXTERNAL","http://www.cnn.com/nwsgrps"}
{10,"LOCAL","/_Services/errors/errorAuthz.aspx"}

FIG. 8

```
                    ┌─────────────┐
                    │    Start    │ ─── 902
                    └─────────────┘
                           │
                           ▼
                ┌───────────────────────┐
                │  Receive URL Request  │ ─── 904
                │     from Client       │
                └───────────────────────┘
                           │
                           ▼
                ┌───────────────────────┐
                │   Retrieve WebPage    │ ─── 906
                │ Linked to Received URL│
                └───────────────────────┘
                           │
                           ▼
                        ◇ 908
                  Detect Link Tag?  ────── No
                        │                    │
                       Yes                   │
                        │                    │
                        ▼                    │
        ┌───────────────────────────┐        │
   910 ─│ Identify URL Corresponding │       │
        │        to Link ID          │       │
        └───────────────────────────┘        │
                        │                    │
                        ▼                    │
        ┌───────────────────────────┐        │
   911 ─│  Incorporate Identified URL│       │
        │      into Source Code      │       │
        └───────────────────────────┘        │
                        │                    │
                        ▼                    │
        ┌───────────────────────────┐        │
   912 ─│  Provide Web Page to Client│◄───────┘
        └───────────────────────────┘
                        │
                        ▼
                  ┌───────────┐
             914 ─│    End    │
                  └───────────┘
```

900

FIG. 9

Docket No.: 60001.0258US01
Title: ABSTRACTING LINKS TO ELECTRONIC RESOURCES IN A NETWORK
ENVIRONMENT
Attorney Name: David D. Wier
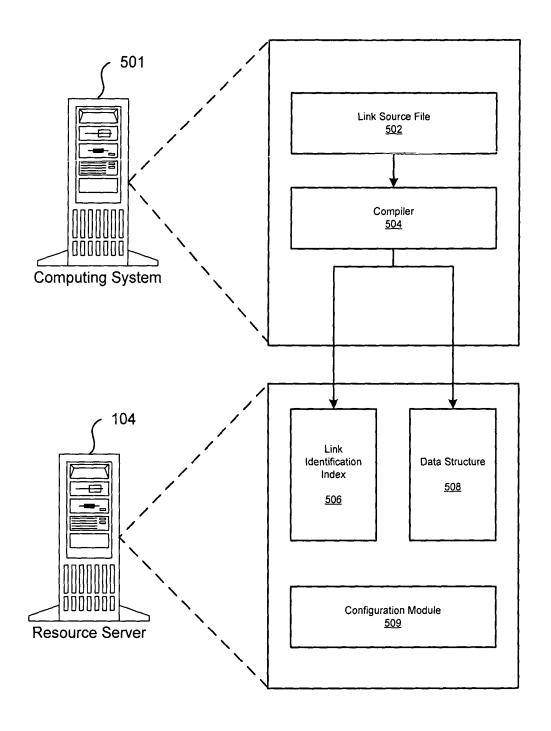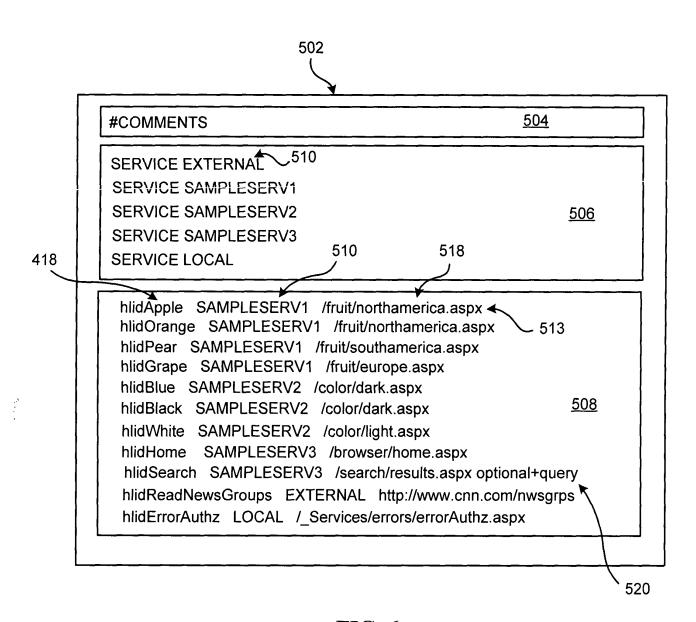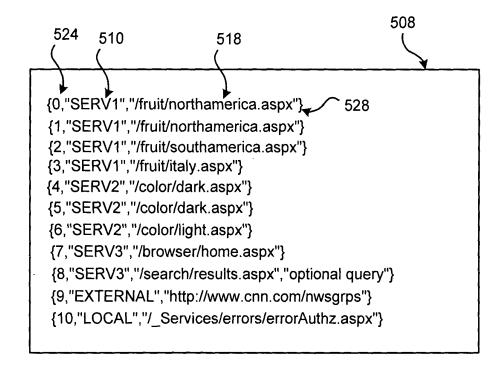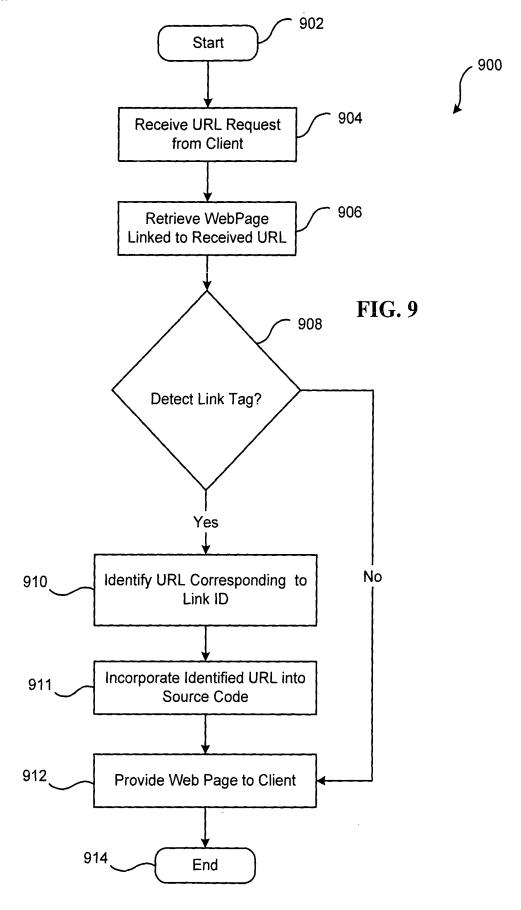Phone No.: (303) 357-1647
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```
                    ┌─────────────┐
                    │   Start     │────── 1002
                    └─────────────┘
                           │
                           ▼
        ┌──────────────────────────────────────┐
        │  Retrieve Index Pointer to Link       │
        │  Identifier                           │────── 1004
        │  from Link Identification Index       │
        └──────────────────────────────────────┘
                           │                              1000
                           ▼
        ┌──────────────────────────────────────┐
        │  Extract Service Class from Data      │────── 1006
        │  Structure                            │
        └──────────────────────────────────────┘
                           │
                           ▼
                       1008
                     ╱       ╲
                   ╱           ╲                  ┌──────────────────────────┐
                 ╱   Is Service  ╲                │                     1010 │
                 ╲  External to   ╲──Yes─────────▶│  Retrieve Path from Data │
                 ╱  Server Cluster?╱               │  Structure and Set as URL│
                   ╲           ╱                   └──────────────────────────┘
                     ╲       ╱                                  │
                        No                                     │
                         │                                     │
                         ▼                                     │
        ┌──────────────────────────────────────┐              │
        │  Determine Domain of Machine on Which │────── 1012   │
        │  Service is Implemented               │              │
        └──────────────────────────────────────┘              │
                           │                                   │
                           ▼                                   │
        ┌──────────────────────────────────────┐              │
        │  Add Path from Data Structure to end  │────── 1014   │
        │  of Domain Name to create URL         │              │
        └──────────────────────────────────────┘              │
                           │                                   │
                           ▼                            1016   │
        ┌──────────────────────────────────────┐──────────    │
        │  Input URL into Source Code of the    │◀─────────────┘
        │  Web Page                             │
        └──────────────────────────────────────┘
                           │
                           ▼
                    ┌─────────────┐
                    │    End      │────── 1018
                    └─────────────┘
```

FIG. 10

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1100

1102 — Start

1104a

1104 — Define Link Source File

Start

1104b — Declare Services

1106 — Interpret and Compile Link Source File

1104c — Define Link Identifiers

1108 — Save Resulting Link Identification Index and Associated Data Structure to Memory

1104d — Define Service, Path and query (optional) for each link identifier

Yes

1110 — Has Link Source File Been Revised?

Start

1104e

No   Yes

1112 — Is Server Cluster Operational?

FIG. 11

No

1114 — End